

PATENT CLAIMS

1. Composition comprising at least one crosslinkable organic medium (A) that has a viscosity of less than 30,000 mPas at a temperature of 5 120°C, and at least one microgel (B) that has not been crosslinked by means of high-energy radiation.
2. Composition according to claim 1, wherein the crosslinkable organic medium (A) has a viscosity of less than 10,000 mPas at a 10 temperature of 120°C.
3. Composition according to claim 1, wherein the crosslinkable organic medium (A) has a viscosity of less than 1000 mPas at a temperature of 120°C.
- 15 4. Composition according to any one of claims 1 to 3, characterised in that the primary particles of the microgel (B) have approximately spherical geometry.
- 20 5. Composition according to claims 1 or 4, characterised in that the variation in the diameters of an individual primary particle of the microgel (B), defined as

25
$$[(d_1 - d_2) / d_2] \times 100,$$
 wherein d₁ and d₂ are any two diameters of the primary particle and d₁ > d₂, is less than 250%.

- 30 6. Composition according to any one of claims 1 to 5, characterised in that the primary particles of the microgel (B) have an average particle size of from 5 to 500 nm.

7. Composition according to any one of claims 1 to 6, characterised in that the primary particles of the microgel (B) have an average particle size of less than 99 nm.
- 5 8. Composition according to any one of claims 1 to 7, characterised in that the microgels (B) exhibit portions that are insoluble in toluene at 23°C of at least about 70 wt.%.
- 10 9. Composition according to any one of claims 1 to 8, characterised in that the microgels (B) have a swelling index in toluene at 23°C of less than about 80.
- 15 10. Composition according to any one of claims 1 to 9, characterised in that the microgels (B) have glass transition temperatures of from - 100°C to +120°C.
- 20 11. Composition according to any one of claims 1 to 10, characterised in that the microgels (B) have a breadth of the glass transition range of greater than about 5°C.
- 25 12. Composition according to any one of claims 1 to 11, characterised in that the microgels (B) are obtainable by emulsion polymerisation.
13. Composition according to any one of claims 1 to 12, characterised in that the microgel (B) is based on rubber.
- 28 14. Composition according to any one of claims 1 to 13, characterised in that the microgel (B) is based on homopolymers or random copolymers.

15. Composition according to any one of claims 1 to 14, characterised in that the microgel (B) has been modified by functional groups reactive towards C=C double bonds.
- 5 16. Composition according to any one of claims 1 to 15, wherein the crosslinkable organic medium (A) is crosslinkable *via* functional groups containing hetero atoms or *via* C=C groups.
- 10 17. Composition according to any one of claims 1 to 16, which comprises from 1 to 60 wt.% of the microgel (B), based on the total amount of the composition.
- 15 18. Composition according to any one of claims 1 to 17, characterised in that it comprises from 10 to 99 wt.% of the crosslinkable organic medium (A), based on the total amount of the composition.
- 20 19. Composition according to any one of claims 1 to 18, characterised in that it additionally comprises fillers and additives.
- 25 20. Composition according to any one of claims 1 to 19, characterised in that it has been prepared by mixing the crosslinkable medium (A) and the microgel (B) by means of a homogeniser, a bead mill, a three-roller mill, a single- or multi-shaft barrel extruder, a kneader and/or a dissolver.
21. Composition according to claim 20, characterised in that it has been prepared by means of a homogeniser, a bead mill or a three-roller mill.
- 30 22. Composition according to any one of claims 1 to 21, characterised in that it has a viscosity of from 25 mPas to 20,000,000 mPas at a

speed of 5 s^{-1} , determined using a cone/plate measuring system according to DIN 53018, at 20°C .

23. Composition according to any one of claims 1 to 22, characterised in
5 that the microgel (B) has a swelling index in toluene at 23°C of less than about 80.
24. Composition according to any one of claims 1 to 23, characterised in
10 that the microgel has been modified by hydroxyl groups.
25. Composition according to any one of claims 1 to 24, characterised in
that the crosslinkable medium is at least one polyol, preferably a diol,
or a mixture thereof.
- 15 26. Use of the composition according to any one of claims 1 to 25 in the
preparation of microgel-containing polymers.
27. Use according to claim 26 in the preparation of microgel-containing
thermoplastic elastomers.
20
28. Use of the composition according to any one of claims 1 to 25 in the
production of moulded articles or coatings.
29. Process for the preparation of microgel-containing polymers by
25 polymerisation of the composition according to any one of claims 1 to
25.
30. Compositions obtainable according to claim 29.
30 31. Use of the compositions according to claim 30 as moulded bodies or
coatings.

32. Process for the production of moulded bodies or coatings by moulding or coating using the compositions according to any one of claims 1 to 25.

5 33. Process for the preparation of the composition according to any one of claims 1 to 25, characterised in that components (A) and (B) are together subjected to treatment by means of a homogeniser, a bead mill, a three-roller mill, a single- or multi-shaft barrel extruder, a kneader and/or a dissolver.

10 34. Process for the preparation of microgel-containing polymer compositions, which comprises mixing at least one crosslinkable organic medium (A) that has a viscosity of less than 30,000 mPas at a temperature of 120°C, and at least one microgel (B) that has not been crosslinked by means of high-energy radiation, then adding a crosslinker (C) for the crosslinkable medium (A) and subsequently crosslinking the composition.

15 35. Process according to claim 34, wherein the crosslinkable organic medium (A) is at least one polyol, preferably a diol, or a mixture thereof, and the crosslinker (C) is at least one polyisocyanate, preferably a diisocyanate, or a mixture thereof.

20 36. Process according to claim 34 or 35, wherein components (A) and (B) are mixed by means of a homogeniser, a bead mill, a three-roller mill, a single- or multi-shaft barrel extruder, a kneader and/or a dissolver.

25 37. Polymer composition obtainable according to any one of claims 34 to 36.

30

38. Arrangement comprising, in spatially separated form: the composition according to any one of claims 1 to 25 and a composition comprising a crosslinker (C) for the crosslinkable organic medium (A).

- 5 39. Use of microgels as a rheological additive, in particular as a thickener or thixotropic agent, in crosslinkable organic media that have a viscosity of less than 30,000 mPas at a temperature of 120°C.